

CLAIMS

An externally activated neuro-implant system for the transmission of therapeutic stimulating signals to an implanted electrode which is used for epidural spinal cord stimulation to control chronic pain, to treat peripheral vascular disease in the lower extremities and angina pectoris, to manage movement disorders with partial motor problems, vagus nerve stimulation to reduce the frequency and duration of epileptic seizures, phrenic nerve stimulation to do diaphragm pacing in respiratory disorders, deep brain stimulation to manage parkinson's disease, peroneal nerve stimulation to correct the dropped foot in neurological disorders, cochlear stimulation to improve hearing losses, or other implantable medical devices for therapy or recording with respect to the brain, spinal cord, nerves, muscles, bones, or other tissue or body organs, comprising:

5 a passive coil housed in a ferrite pot core, that is implanted under the skin and is connected to a monopolar, bipolar, triplex, quadripolar or any multipolar implantable electrode via insulated thin wires;

10 an active coil housed in a ferrite pot core, that is placed on the skin overlying the implanted passive coil, and is linked to the transmitter via a flexible cable;

20 a transmitter device with associated electronic circuitry including power source, timer-counter or microprocessor, microcontroller, amplifier and output transformer configured to generate any programmable mode of electrostimulation pulses in accordance with the required therapy to drive the external active coil;

25 2. The neuro-implant system of claim 1 wherein said the transmission includes the transfer of therapeutic signals produced by the transmitter outside the body by trans-dermal inductive coupling through the active and passive coils each housed in a ferrite pot core; also transfer of recording or feedback signals from the brain, spinal cord, nerves, muscles, bones, or other tissue or body organs.

30 3. The neuro-implant system of claim 1 wherein said the transmission further includes the transfer of recording or feedback signals from the brain, spinal cord, nerves, muscles, bones, or other tissue or body organs by trans-dermal inductive coupling through the active and passive coils each housed in a ferrite pot core.

35 4. The neuro-implant system of claim 1, further comprising a fully passive implanted part including only a passive coil, housed in a ferrite pot core, that is connected to

an implanted electrode, thus avoiding the risk of additional surgery which may result from electronic breakdown or expired battery.

5. The neuro-implant system of claim 1, further comprising more than one passive coil, e.g. two or three, each housed in a ferrite pot core, to construct a passive coils array combined with multi-contact electrodes for switching of electrical stimulation between a number of sites along target neurons, and thereby combat electrode placement difficulties.